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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/044,550 | 01/11/2002 | Peter Dunlop | INN 0004 NA | 4928 |

7590 11/24/2003

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EXAMINER

SHAPIRO, JEFFERY A

| ART UNIT | PAPER NUMBER |
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3653

DATE MAILED: 11/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

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|-----------------------|--------------------------------|-------------------------------|--|
| Office Action Summary | Application No. 10/044,550 | Applicant(s) DUNLOP ET AL. | |
| | Examiner Jeffrey A. Shapiro | Art Unit 3653 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10, 12-20 and 28 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10, 12-20 and 28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 10, and 13-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Levasseur in view of Nakai et al . Levasseur discloses the banknote validator as follows.

As described in Claim 10;

1. a banknote validator including an optical sensor for sensing optical characteristics of a banknote (B) (also, see abstract) being validated;
2. the optical sensor comprising as follows;
 - a. a light source (120);
 - c. a photodetector (121-125)
3. wherein the light source (120) is a source of broadband light and the light guide is arranged to operate as both;
 - a. an incident light-directing means for directing light from the light source onto the banknote (see figure 8, noting the light direction arrows indicating the light being directed towards the banknote (B), and;

b. as a reflected light-directing means for directing light reflected from the banknote to the photodetector via the optical filter (note reflected light direction arrows leading from the banknote to the photosensor (121));

As described in Claim 16;

12. an optical banknote sensor (OS), (See col. 5, lines 34-42) configured to sense light reflected by a banknote being validated, characterized in that the sensor is configured to sense light reflected obliquely from the banknote being validated (see figure 8, noting that direction lines for the light are at angles with respect to the banknote (B));

As described in Claim 17;

13. the sensor is configured to sense light reflected from the banknote being validated at an angle in the range of 60 – 80 degrees to the surface of the banknote at the point of reflection (note that the angle of the reflected light in figure 8 appears to be at an angle of 60-80 degrees);

As described in Claim 18;

14. the angle is 70 degrees (note that the angle of the reflected light in figure 8 appears to be at an about an angle of 70 degrees—note also that it would have been a matter of design choice as to which angle to use based on which angle provides the best presentation of light to the photosensors for best imaging accuracy);

Levasseur does not expressly disclose, but Nakai et al discloses the following.

As described in Claims 10 and 19;

2. the optical sensor comprising as follows;
 - a. a light source (4416, for example)(see col. 8, lines 1-12);
 - b. a light guide (2', 2, 3 and 3') (see also col. 6, lines 36-40)(note that it would be obvious for one ordinarily skilled to place a light guide on a light source to focus the light and to keep the light source isolated from dirt—note also that Levasseur discloses a “light transmissive area” in Claim 1);
 - c. a photodetector (4208)
 - c.1 which is preceded by an optical filter (4201-4203);

As described in Claim 13;

7. the light source produces light substantially across the whole of the visible spectrum (see Nakia et al, col. 8, lines 2-12);

As described in Claim 14;

8. the optical sensor comprises;
 - a. a plurality of photodetectors (note Levasseur's photodetectors and that it would be obvious to use multiple detectors to improve accuracy—note also Nakamia's photocells (4208 and 4208'));
 - b. a plurality of optical filters (4201-4203);

9. to which light is directed by the light guide (note that light guides are well-known by those skilled in the art to be used for focusing light from light sources);

10. the optical filters having different passbands and being associated with respective photodetectors (note that it would be expedient for one ordinarily skilled in the art to provide a filter for eliminating any wavelength which is undesired—this would be based on the situation at hand—see also Nakamia, col. 8, lines 65-67 and col. 9, lines 1-20);

As described in Claim 15;

11. the 3dB stopbands of the filters are 420-720nm and 480-540nm together with >820nm respectively (See Nakamia, col. 8, lines 65-67, col. 9, lines 1-20 and col. 10, lines 11-20 and lines 59-63);

Both Levasseur and Nakai et al are considered to be analogous art because they both concern banknote image scanning means.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have added filters and a light guide to the light source and photodetector system of Levasseur.

The suggestion/motivation would have been to filter out unwanted bandwidth based on the desired information to be measured. See col. 8, lines 66-67 and col. 9, lines 1-20. The light guide would have been suggested as a lens to focus the reflected light or, simply to keep out impurities such as dust. See col. 10, lines 12-19.

Therefore, it would have been obvious to combine Levasseur and Nakai et al to obtain the invention as specified in Claims 10, and 13-19.

Claims 12, 20 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Levasseur in view of Nakai et al and further in view of Yamana et al. Levasseur discloses the banknote validator as described above. Levasseur does not expressly disclose, but Yamana et al discloses the following.

As described in Claims 12, 20 and 28;

4. the light guide is substantially in the form of a trapezoid (see col. 4, lines 38-53;

5. the narrow end of which is adjacent to the light source and the photodetector and;

6. the broad end of which is adjacent to a banknote path;

(See col. 4, lines 38-53)

16. the light guide comprises a transparent, trapezoidal, planar solid having a narrow end and a broad end, the narrow adjacent the photodetector and the broad end being adjacent a banknote path (see col. 4, lines 38-53);

17. the light guide comprises a translucent and planar solid (note that it would have been expedient for one ordinarily skilled in the art to provide such a light guide, as it could not work without being translucent, and also

noting that a solid provides better refraction characteristics than a translucent liquid, for example.)

Both Levasseur and Yamana et al are considered to be analogous art because they both concern document image scanning means.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have made the light guide of Levasseur a trapezoid with the wider portion located close to the document.

The suggestion/motivation would have been to magnify or capture the reflected light and direct it to the opposite end, therefore increasing the accuracy of the image as presented to the photodetector. See col. 4, lines 38-53. See also Frick (US 6,072,560), col. 2, lines 48-67 and col. 3, lines 1-9 as well as Routt, Jr. et al, (US 4,342,511), Claim 1, for example.

Therefore, it would have been obvious to combine Levasseur and Yamana et al to obtain the invention as specified in Claims 12, 20 and 28.

Response to Arguments

3. Applicant's arguments filed 11/12/03 have been fully considered but they are not persuasive. Applicant asserts that the system of Nakai does not have "light guides", but "light receiving faces". However, Applicant is directed to figure 1 of Nakai which illustrates the "light receiving faces (2' and 3') as being part of light guides (2 and 3), which each are shown as having depth and volume, and each receive light. Therefore,

Art Unit: 3653

it is construed that sensors (2 and 3) are light guides. These elements have been included in the rejection above.

As to a teaching of where to place such light guides, one ordinarily skilled in the art would recognize that such guides would be placed in order to capture the light optimally. Also, Levasseur indicates in figure 8, the directions of the light being directed at the banknote as well as the light reflected from the banknote surface. Note also Yamana et al discloses using a light source with a light guide, which one ordinarily skilled in the art would recognize can be used to focus light if placed in the path of such light. In other words, one ordinarily skilled in the art would find it obvious to place a light guide, such as that of Nakai in the path of the light generated by the light sources of Levasseur so as to focus said light as well as the reflected light, thereby guiding said light in a controlled manner.

Regarding the filters, Applicant's claimed filters would be inserted at an appropriate location based upon the requirements of the situation. The motivation/suggestion would have been to filter out unwanted spectrum. The reason for one ordinarily skilled to place such a filter at the narrow end of a trapezoidal light guide would be to filter out particular spectrum from the collected light before it was further acted upon. Again, it would have been obvious for one ordinarily skilled to have placed such a trapezoidal light guide with filter in the path of the light generated by the light sources of Levasseur, so that this light can be focused and prepared for processing. The cited prior art and passages cited above appear to support this conclusion, as described above. Therefore it would have been obvious for one ordinarily skilled in the

Art Unit: 3653

art to provide Applicant's claimed apparatus. Therefore, Applicant's claims, as currently written, and reasonably, broadly construed, remain rejected.

Note that it may be useful in further amendments to the claims to more particularly describe the actual structural details of the trapezoid and particular locations of the various elements in figure 10, such as elements (111, 112) or the lower appendages of the trapezoid shown in the side view, near the 70 degree angle.

Conclusion

4. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

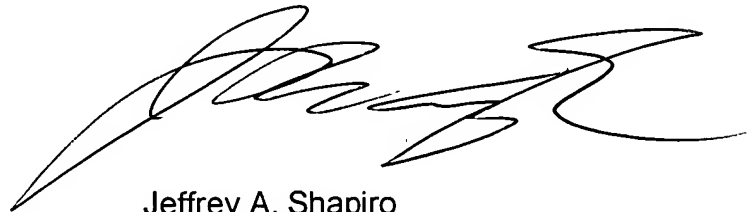
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey A. Shapiro whose telephone number is (703)308-3423. The examiner can normally be reached on Monday-Friday, 9:00 AM-5:00 PM.

Art Unit: 3653


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald P. Walsh can be reached on (703)306-4173. The fax phone number for the organization where this application or proceeding is assigned is (703)306-4195.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-1113.



Jeffrey A. Shapiro
Examiner
Art Unit 3653

November 20, 2003



DONALD P. WALSH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3600